

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-249409

(43)Date of publication of application : 26.09.1995

---

(51)Int.Cl.

H01M 4/02  
H01M 4/58  
H01M 10/40

---

(21)Application number : 06-066422

(71)Applicant : FUJI PHOTO FILM CO LTD

(22)Date of filing : 11.03.1994

(72)Inventor : MIYASAKA TSUTOMU

---

## (54) NONAQUEOUS ELECTROLYTE SECONDARY BATTERY

### (57)Abstract:

**PURPOSE:** To increase discharging voltage to improve discharging capacity and a charging/discharging cycle performance by using an oxide, containing metal or semimetal in IV-B and V-B groups of a periodic table and fluorine and capable of inserting and releasing lithium, for negative electrode active material.

**CONSTITUTION:**  $\text{SnF}_{0.2}\text{O}_{2.8}$ , obtained by uniformly mixing  $\text{SnO}$  and  $\text{SnF}_2$  to have a mol ratio of 9:1 to be sintered at  $950^\circ\text{C}$  in argon gas and then cooled to room temperature, is powdered to be adopted as negative electrode active material. Positive electrode active material is compounded by mixing and baking lithium and transition metal compounds. Negative and positive electrodes use negative electrode active material and polyvinylidene fluoride as a binding agent and positive electrode active material and tetrafluoroethylene as a binding agent in a ratio of 82 active material: 6 binding agents in wt.% respectively. Scalelike graphite and acetylene black of 8 and 4wt.% respectively are added as a conductive agent to each active material and binding agent in both negative and positive electrodes to be compression-molded to be adopted as a pellet, and an electrolyte as a separator is impregnated into a nonwoven fabric to be used. Consequently, a lithium ion secondary battery having high discharging voltage and large discharging capacity, and excellent in charging/discharging cycle performance can be manufactured.

---

## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平7-249409

(43) 公開日 平成7年(1995)9月26日

(51) IntCl. <sup>8</sup>	識別記号	序内整理番号	F I	技術表示箇所
H 0 1 M	4/02	D		
	4/58			
	10/40	Z		

審査請求 未請求 請求項の数9 F D (全 9 頁)

(21) 出願番号 特願平6-66422

(22) 出願日 平成6年(1994)3月11日

(71) 出願人 000005201

富士写真フイルム株式会社

神奈川県南足柄市中沼210番地

(72) 発明者 宮坂 力

神奈川県南足柄市中沼210番地 富士写真

フイルム株式会社内

(74) 代理人 弁理士 萩野 平 (外3名)

(54) 【発明の名称】 非水電解質二次電池

(57) 【要約】

【目的】 放電作動電圧が高く、放電容量の大きい、良好な充放電サイクル性能を有する安全性の高い非水電解質二次電池、特に非水電解質リチウム二次電池を提供する。

【構成】 正極活物質、負極活物質、リチウム塩を含む非水電解質から成る非水二次電池において、該負極活物質が周期律表Ⅴ-B、Ⅵ-B族の金属もしくは半金属の1種以上とフッ素とを含有し、リチウムを挿入、放出する酸化物であることを特徴とする非水電解質二次電池